CASIO

INSTRUCTION MANUAL
MANUAL DE INSTRUCCION

FC 英 西

Thank you very much for purchasing the FA-3 tape recorder interface.
This interface is an exclusive adapter for connecting an ordinary tape recorder to a PB-100 or FX-700P.

Even if it is connected incorrectly, the calculator and the tape recorder will not be damaged. However, if it is used incorrectly, important programs or data may be erased or not be transferred to the tape thereby defeating the purpose of its use.
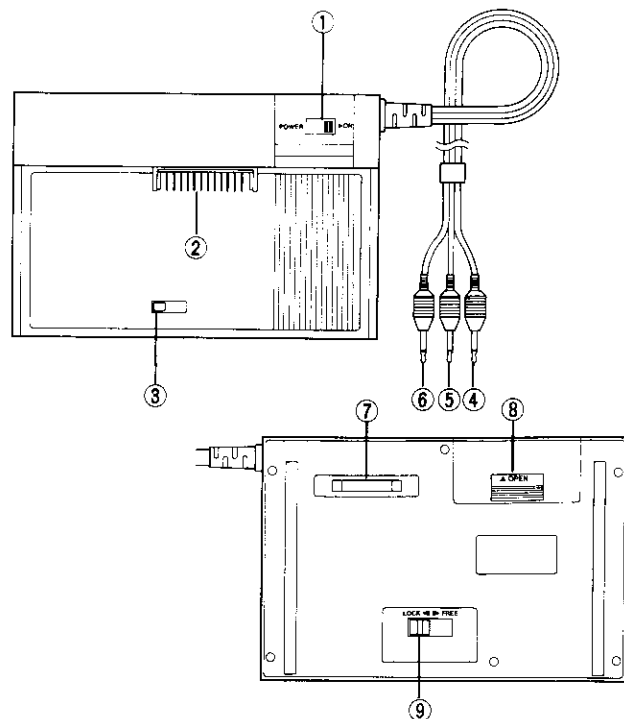In order to avoid this, please become throughly familiar with the operating procedures.

This manual may be used with both the PB-100 and the FX-700P. Since key operating instructions for linkage have been omitted, refer to the computer operation manual.
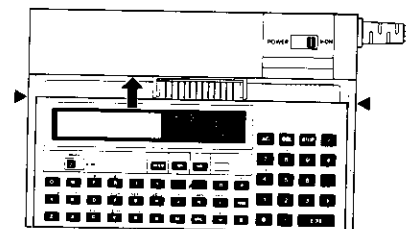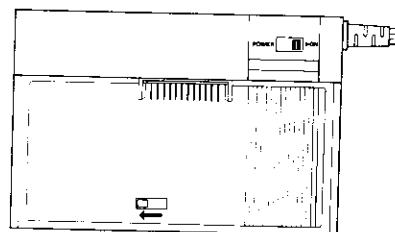
Contents

Construction

① **Power switch**
If the power switch is turned on, the remote will operate.
② **Connector for Calculator**
③ **Guide for fitting calculator**
④ **Black plug**
⑤ **White plug**
⑥ **Gray plug**
⑦ **For fitting a connector cap**
⑧ **Battery lid**
⑨ **Guide rock for fitting calculator**
　LOCK: Locks the calculator in place
　FREE: Allows the calculator to be removed

-3-

How to Connect to the Calculator

(1) Turn the power switch of the calculator off.
(2) Place the guide for fitting calculator of the FA-3 in the FREE position.
(3) Align the top of the calculator with the " ▶ ◀ " marks.
(4) Line up the connectors of the FA-3 and the calculator and slide the calculator in the direction of the arrow.
(5) Place the guide for fitting calculator in the LOCK position.

(Precautions)

● Prior to connecting, insure that the power switches of the calculator and the FA-3 are off.
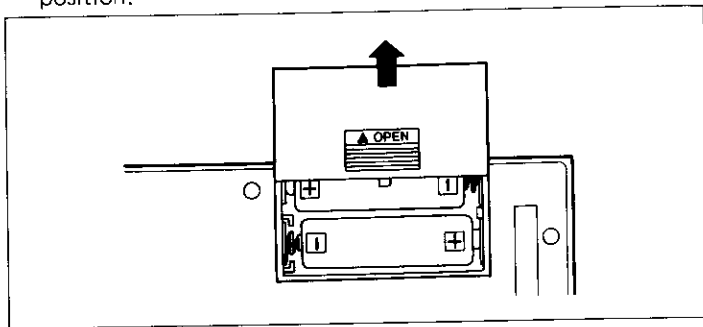● Be careful not to bend the FA-3 connector pins.

-4-

Power Source

This adaptor uses two AA size manganese dry batteries (UM-3 or SUM-3) for remote control. When the batteries run out, the remote control function will not work properly. In such a case, replace the batteries with new ones.

■ Replacing the Batteries

1) Remove the battery lid at the rear of the adaptor, by pushing the knurled area in the direction indicated by the arrow.
2) Remove batteries, and replace them with new batteries. Make sure the polarity is right when putting in new batteries.

CAUTION: **Installing the batteries with reverse polarity may cause them to burst and result in serious damage to the unit.**

3) Replace the lid by pushing it in the opposite direction of the arrow. You will hear a click when the lid is back in its original position.

Note: * When replacing the batteries, replace them all.
* Replace the batteries every two years, even though the remote control function may still work properly.
* Do not throw used batteries in a fire, they may explode.

Functions

1) Saves a program on a tape (SAVE).
2) Loads a program on a tape into the calculator (LOAD).
3) Transfers the contents of the data memories into the tape (PUT).
4) Transfers data from a tape into the data memories of the calculator (GET).
5) Transfers all the programs in the calculator into the tape at once (SAVE A).
6) Transfers all the programs on a tape into the calculator (LOAD A).

■ The FA-3 can be connected to:

Tape recorders and tape decks that use cassette tapes or micro-cassette tapes.

■ Requirements for the tape recorder:

1) The input terminal of the tape recorder (the MICROPHONE terminal or equivalent) must be (1) 10 kohm or greater in input impedance, and (2) 3 mV or higher in minimum input level.
2) The output terminal of the tape recorder (the EARPHONE terminal or MONITOR terminal or equivalent) must be (1) 10 ohm or less in output impedance, and (2) 2.5 V or greater in output level.
3) The remote control terminal of the tape recorder (or equivalent) must have a specification of 24 Vdc, 1 A or less.
4) Total distortion must be 15% or less.

The tape recorder must have jacks that satisfy the above requirements. Most cassette tape recorders currently on the market (radio cassette recorders, etc.) satisfy these requirements; but even if your tape recorder differs slightly, it may still work with the FA-3. Note that mismatching will not damage either the adaptor or the tape recorder.

Note: * Use plug adaptors available on the market if necessary.
  * The requirement for the remote control terminal is important. Make sure that it is met. If not, the remote control function of the FA-3 may be damaged.

For proper operation, check the following:
● The jacks of the tape recorder must be free from rust and damage.
● The magnetic head must be clean and not excessively worn.
● Magnetic tapes available on the market may be used, but the frequency response should be fairly good.
● The magnetic tape must be free from scratches and creases. Avoid using the first and last 30 seconds of the tape.
● If the tape recorder does not work properly on an AC outlet or with an AC adaptor, use batteries.
● Connect the calculator securely to the FA-3, and do not remove it in the middle of operation. Before removing the calculator, turn off its power switch.
● Use the same tape recorder for recording and playback. If you do not use the same tape recorder, you may not be able to transfer data although this is rare.
● Take good care of recorded tapes. Tapes that are not stored properly may not reproduce data because of elongation or other reasons.
● When connecting a calculator to the FA-3, turn off the power switch of the calculator, and then connect the calculator securely.
● If the connector pins are touched by hand, they may become bent or dirty thereby preventing proper connection. Also, static electricity from the human body may damage the internal circuitry, so avoid touching the connector pins. When not in use, please cover with the two connector caps.

Setting up for Recording and Playback

■ Connections

●Connect the white plug of the FA-3 to the MICROPHONE jack of the tape recorder. If you are using a stereo tape recorder, connect to the right channel.

●Connect the black plug of the FA-3 to the EARPHONE, MONITOR, or EXTERNAL SPEAKER jack. In case of a stereo tape recorder, use the same channel as used for recording.

●Connect the gray plug to the remote control jack of the tape recorder.

●Normally, the system (FA-3 and tape recorder) works properly with all three plugs connected to the FA-3. However, some tape recorders may develop noise when the white and black plugs are connected at the same time. If so, connect only the white plug when recording (calculator to tape), and only the black plug when playing back (tape to calculator).

■ Recording level adjustment

●If your tape recorder has an automatic level control, turn it on.
●If not, adjust the level control manually as follows:
Record test data, and, while doing so, adjust the level control so that the VU meter reads zero.

Note: If the level meter deflection is extremely wide, do not use that particular tape recorder.

■ Output level adjustment

●Set the volume control higher than you would usually when listening to music. The position of the volume control should be between the middle and maximum points. (Usually the maximum point works best.)

●In the case of a stereo tape recorder, turn the balance control to the extreme position of the channel you are using (i.e. the channel the black plug is connected to).

●If your tape recorder has a microphone-mixing feature, turn the SOURCE level control to maximum, and the MICROPHONE level control to minimum.

■ Miscellaneous adjustment

●Set the TONE, BASS, and TREBLE controls to a medium level.
●Set the tape selector in accordance with the type of tape.

Program SAVE/LOAD

■ Saving Programs

To save a program on a tape, operate the calculator as follows:

SAVE ["file name"]   (Items within the brackets can be omitted.)

When P0 is specified as the program area, P0 program will be saved, and if P3 is specified, P3 program will be saved, and so forth. File name is a character or numeral string enclosed within quotation marks (" "); and the string must be eight elements or less in length.

Example: "A", "35", "PRG-1", "CASIO"

This SAVE command saves only the program in a specific program area. If you want to save all the programs (P0 through P9) at once, use the SAVE A command (see P. 15).

Procedure
1) Turn on the power.
2) Advance or rewind the tape to the position you want to start recording, and note the reading of the tape counter.
3) Start the tape recorder in the RECORD mode.
4) Operate the calculator as follows:

SAVE ["file name"] EXE

5) The tape recorder automatically stops when the saving process is completed. (If your tape recorder does not have remote control capability, stop the tape recorder manually.)

Note: The SAVE command can be input only manually; it cannot be included in a program to perform the operation automatically.

■ Loading Programs

To load a program from a tape into the computer, operate as follows:

LOAD ["file name"]

(Items within the brackets can be omitted.)

When P1 is specified as the program area, the program will be loaded into program area "P1". As in the SAVE command, "file name" can be omitted; in this case the first program found on the tape will be loaded. This command can be used only manually, and cannot be included in programs.

Procedure — Manual operation

1) Turn on the power.
2) Using the tape counter find the tape location two or three counts ahead of the file you want to load.
3) (Only for systems with remote control capability) Start the tape recorder in the PLAYBACK mode.
4) Operate the computer as follows:

LOAD ["file name"] EXE

5) (Only for systems without remote control capability) Start the tape recorder in the PLAYBACK mode.
6) The tape recorder stops automatically when the loading process is completed. (If your system does not have remote control capability, stop the tape recorder manually.)

Readout on the display

While loading:

```
P F : P R G - 1
```
    program file   file name

When loaded (in case of "RUN" mode):

```
R E A D Y   P n
```

Note: The loading process can be carried out even when the program area is not cleared of the old program.

If the old program has not been cleared, the memory location to which the first line number of the new program is loaded, and the memory locations thereafter, will be cleared and loaded with the new program.

(Example)

Old program in P0	New program loaded	After loading
10 INPUT A $\wr$ 90 PRINT B 100 FOR I=1 TO 100 $\wr$ 300 PRINT C	100 INPUT X $\wr$ 200 PRINT Y	10 INPUT A $\wr$ 90 PRINT B 100 INPUT X $\wr$ 200 PRINT Y

+ →

Data PUT/GET

■ Recording data on a tape is done by the PUT command.

To "put" data, operate as follows:

PUT ["file name"] variable

(The item within the brackets can be omitted.))

The variable in the command can range from $, A, B, ... up to Z or Z(n). If you want to put (record), for instance, A through Z, enter "A, Z" for "variable".

(Example)

To "put" $, A, B, C, D: PUT ["file name"] $, A, D
        A through Z;   PUT ["file name"] A, Z
        A through Z and Z(1) through Z(50):
                PUT ["file name"] A, Z(50)

When you want to "put", for instance, A through Z, do not enter "Z, A" in stead of "A, Z"; this will cause an error.

(Example)   PUT H, A——→ Error

■ Retrieving data from a tape is done by the GET command.

To "get" data, operate as follows:

GET ["file name"] variable

(The item within the brackets can be omitted.)

Variable is expressed in the same manner as in the PUT command — for example, "$, A", "$, A, Z".

■ The PUT and GET commands can be programed, or can be executed manually.

●Procedure for Manual Operation

< Putting data >

1) Turn on the power.
2) Advance or rewind the tape to the point where you want to start recording, and note the reading of the tape counter.
3) Start the tape recorder in the RECORD mode.
4) Operate the computer as follows:

PUT ["file name"] variable 🖽

5) When the "putting" process is completed, the tape recorder stops automatically. (If your tape recorder does not have remote control capability, stop the tape recorder manually.)

< Getting data >

1) Turn on the power.
2) Using the tape counter, find the tape location two or three counts ahead of the file you want to "get".
3) (Only for systems with remote control capability) Start the tape recorder in the PLAYBACK mode.
4) Operate the computer as follows:

-13-

GET ["file name"] variable 🖽

5) (Only for systems without remote control capability) Start the tape recorder in the PLAYBACK mode.
6) When all the data are retrieved, the tape recorder stops automatically. (If your system does not have remote control capability, stop the tape recorder manually.)

●Procedure for Programed Operation

Tape recorders with remote control capability can be operated automatically by the computer. But those without remote control capability must be operate carefully in order to adjust the timing.
The following procedure assumes that the tape recorder is controlled automatically.

(Example)   Program to PUT   Program to GET
                    :   10 GET "D" A, Z
                    :   :
             490 PUT "D" A, Z   :
             500 END   :

< Putting data >

1) Turn on the power.
2) Advance or rewind the tape to the point where you want to start recording, and note the reading of the tape counter.
3) Start the tape recorder in the RECORD mode.
4) Run the program in which you have written a PUT command.
5) When the program advances to the PUT command, the tape recorder starts recording. When the PUT operation finishes, the tape recorder stops automatically.

< Getting data >

1) Turn on the power.
2) Using the tape counter, find the tape location two or three counts ahead of the file you want to "get,".
3) Start the tape recorder in the PLAYBACK mode.
4) Run the program in which you have written a GET command.

-14-

5) When the program advances to the GET command, the tape recorder starts playing back. When the GET operation finishes, the tape recorder stops automatically.

Readout on the display while retrieving data:

```
┌─────────────────────────────────┐
│ V F : D                         │
└─────────────────────────────────┘
   │     │
 Data file  File name
```

As in the SAVE and LOAD commands for programs, file name can be omitted in the PUT and GET commands.

All programs SAVE/LOAD

The SAVE (or LOAD) command previously discussed saves (or loads) only one program in a specific program area. If your program consists of two or more program areas, it is convenient to be able to save or load all the programs at one time.

The format of the commands are:

SAVE A "file name"   (File name can be omitted.)
LOAD A "file name"

■ Procedure to "SAVE A"

1) Turn on the power.
2) Advance or rewind the tape to the point where you want to start recording, and note the reading of the tape counter.
3) Start the tape recorder in the RECORD mode.
4) Operate the computer as follows:

SAVE A "file name" [EXE]

5) When all the programs and data are saved, the tape recorder stops automatically. (If your tape recorder does not have remote control capability, stop the tape recorder manually.)

■ Procedure to "LOAD A"

1) Turn on the power.
2) Using the tape counter, find the tape location two or three counts ahead of the file you want to "load all".
3) (Only for systems with remote control capability) Start the tape recorder in the PLAYBACK mode.
4) Operate the computer as follows:

LOAD A "file name" [EXE]

5) (Only for systems without remote control capability) Start the tape recorder in the PLAYBACK mode.
6) When all the pertinent programs and data are loaded, the tape recorder stops automatically. (If your tape recorder does not have remote control capability, stop it manually.)
The SAVE A and LOAD A commands can be used only manually (interactively), and cannot be included in programs.

Read out on the display while loading all programs:

```
┌─────────────────────────────────┐
│ A F : Z Z                       │
└─────────────────────────────────┘
   │          │
All program file   file name
```

Note: When the LOAD A command is executed, all the programs in the calculator are cleared and the new programs will be loaded.

The VER (verify) command checks whether the programs and data have been saved correctly. The format of the command is:

VER "file name" (File name can be omitted.)

Procedure
1) Turn on the power.
2) Using the tape counter, find the tape location two or three counts ahead of the file you want to check.
3) (Only for systems with remote control capability) Start the tape recorder in the PLAYBACK mode.
4) Operate the computer as follows:

VER "file name" [EXE]

5) (Only for systems without remote control capability) Start the tape recorder in the PLAYBACK mode.
6) The tape recorder stops automatically when the checking process is completed. (If your tape recorder does not have remote control capability, stop it manually.)

Note: If an error message appears, or the display does not go further than "—" to show the file number, the verifying process is not working properly. Make sure all the conditions for the saving process are met (output level of the tape recorder, connection of plugs, etc.), then go through the checking procedure once again. If this does not improve the situation, go through the saving procedure again. This checking process does not verify all the data by comparing the calculator and the tape step by step, but only checks the parity of the data on the tape to make sure the data follow the prescribed format. Differences in data contents between the calculator and the tape do not necessarily result in an error.

Model: FA-3 (tape recorder adaptor for CASIO PB-100 and FX-700P)

Output terminal: White mini-plug, output impedance: approx. 40 kohms, output level: 3 — 50 mV

Input terminal: Black mini-plug, input impedance: approx. 20 kohms, input level: 2.5 — 50 V

Remote control terminal: Gray mini-plug, 24V, 1 A or less

Data recording format: Kansas City standards (300 BPS)

Power source: (For remote control) Two AA size manganese dry batteries (UM-3 or SUM-3)

Power consumption: 0.3 W

Battery life (for continuous operation):
approx. 10 hours (UM-3(PZ))
approx. 10 hours (SUM-3)

Ambient temperature range: 0°C — 40°C (32°F — 104°F)

Dimensions: 31.5mmH x 173mmW x 114mmD
(1-1/4"H x 6-7/8"W x 4-1/2"D)

Weight (including batteries): 244 g (8.6 oz)

GUIDELINES LAID DOWN BY FCC RULES FOR USE OF THE UNIT IN THE U.S.A. (not applicable to other areas).

This equipment generates and uses radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio and television reception. It has been type tested and found to comply with the limits for a Class B computing device in accordance with the specifications in Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
..... reorient the receiving antenna
..... relocate the computer with respect to the receiver
..... move the computer away from the receiver
..... plug the computer into a different outlet so that computer and
      receiver are on different branch circuits.
If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user may find the following booklet prepared by the Federal Communications Commission helpful: "How to Identify and Resolve Radio-TV Interference Problems" This booklet is available from the US Government Printing Office, Washington, D.C., 20402, Stock No. 004-000-00345-4.

Muchas gracias por haber comprado el interfaz de registro magnético FA-3.
Este interfaz es un adaptador exclusivo para conectar un grabador magnetofónico común a la PB-100 ó FX-700P.

Aunque se lo conecte incorrectamente, la computadora y el grabador no se dañarán. Sin embargo, si se lo utiliza incorrectamente, los programas o datos importantes pueden borrarse o no ser transferidos a la cinta, anulándose así el propósito de su uso.
Para evitar ésto, sírvase familiarizarse bien con los procedimientos de operación.

Este manual puede utilizarse con la PB-100 y FX-700P. Por otra parte, debido a que las instrucciones de operación clave para enlace han sido omitidas, remítase al manual de instrucciones de la computadora.